ECRONICON OPEN ACCESS

EC CLINICAL AND MEDICAL CASE REPORTS

Case Report

A Rare Diagnosis of Nasopharyngeal Papillary Adenocarcinoma - Thyroid Like Type

F Rhana Mousavi[1], Abanoub Gabra[1]*, Nick A Hirad[2] and Alan Schiller[1]

[1]*Department of Pathology, HCA East Florida GME Consortium, United States*

[2]*Charles E. Schmidt College of Science, Florida Atlantic University, United States*

***Corresponding Author:** Abanoub Gabra, Department of Pathology, HCA East Florida GME Consortium, United States.

Received: April 10, 2023; **Published:** April 21, 2023

Abstract

Thyroid-like low grade nasopharyngeal papillary adenocarcinoma (LGNPAC) is an extremely rare tumor of nasopharynx with only 42 cases reported in the literature [1]. Nasopharyngeal papillary adenocarcinoma represents 0.48% of all nasopharyngeal tumors and it has no preference for gender or age [2]. Herein, we discuss a 43-year-old, Cuban origin, HIV positive male presenting with episodes of bloody post-nasal drip, constant sensation of something on his throat for 4 months. He underwent a flexible laryngoscopy, found a 3 x 3 x 2 cm, peduncular nasopharynx lesion. The tumor excised endoscopically thereafter. Many of those with LGNPAC may present with nasal obstruction and rarely recurs if completely excised.

Keywords: *Nasopharyngeal Papillary Adenocarcinoma-Thyroid Like; Low Grade Nasopharyngeal Papillary Adenocarcinoma; Peduncular*

Introduction

Thyroid-like low-grade nasopharyngeal papillary adenocarcinoma (LGNPAC) is a rare and uncommon tumor of nasopharynx; where, unlike nasopharyngeal carcinoma is not associated with wood dust exposure, gender, or other known factors.

In addition, risk factors for nasopharyngeal carcinomas, includes EBV infection in endemic regions or HPV in non-endemic regions, smoking, genetic susceptibility, high levels of nitrosamines in preserved food, certain occupational exposures, and post radiation therapy [3]. The prognostic factor is poor especially in keratinizing type. Nasopharyngeal carcinomas are classified into the following subtypes: non-keratinizing squamous cell carcinoma, keratinizing squamous cell carcinoma, basaloid squamous cell carcinoma and nasopharyngeal papillary adenocarcinoma (NPPA). NPPA includes conventional or mucosal surface origin type and the salivary gland type, and thyroid like low-grade NPPA (TL-LGNPPA), which belongs to the former one [5]. Based on the previous case reports, TL-LGNPPAs presented as a polypoid and exophytic mass, ranging in size from a few millimeters to 3.0 cm. It may occur anywhere in nasopharynx but preferably roof, posterior or lateral wall [9]. Complete excision of the tumor is usually curative, which can be done endoscopically [10]. The tumor has no reported incidents of metastasis or local recurrence after complete excision with negative margins.

Case Description

A 42-year-old man, HIV positive, presented with complaints of episodes of bloody post-nasal drip, Hemoptysis, snoring and constant sensation of something on his throat for 4 months. He was on Biktarvy since August 2021 for HIV treatment. No known allergies. He is not a smoker. On Otoscopic examination, no abnormalities seen as well as enlarged cervical lymph nodes. No other abnormalities were found during physical examination. Nasal endoscopy showed nasal deviation. Flexible Laryngeal endoscopy revealed a peduncular 3 x 3 x 2 cm mass on the posterior roof of the nasopharynx. The mass excised completely through flexible laryngeal endoscopy without postoperative complications. On Gross examination, the mass was red and soft in consistency, measuring 3 x 3 x 2 cm, submitted for pathology evaluation.

Based on microscopic examination, papillary structures are complex with arborization and fibrovascular cores, lined by cuboidal or columnar cells, mild to moderate nuclear pleomorphism, inconspicuous mitotic figures and abundant psammoma bodies.

The tumor cells exhibited expression of thyroid transcription factor-1, CK7, and Vimentin [8] and lack of expression of Thyroglobulin by immunohistochemical studies, justifying the diagnosis of TL-NPPAC.

A post-operator follow-up visit in a week and 6 weeks was satisfactory. The patient was on Fluticasone Propionate 50 mcg/ACT nasal spray at bedtime to subside surgical site congestion. A PET CT scan of skull base to mid-thigh reported with no evidence of FDG avid malignancy or cervical adenopathy. Patient was scheduled for annual re-evaluation visit. No adjuvant chemotherapy or radiotherapy performed following surgery.

Two subsets of low-grade nasopharyngeal papillary adenocarcinoma are defined in the literature. The conventional type shows positivity with CK5/6, CK7, and S100. The second subtype is thyroid-like which shows strong positivity for TTF-1 and CK19. Both are CK20 and CDX2 negative [7]. The term “thyroid-like nasopharyngeal papillary adenocarcinoma (TL-NPPAC)” was given based on the tumor’s immunohistochemical features and histological features that include a papillary structure, psammoma bodies, neoplastic cells with overlapping nuclei, and clear chromatin [4].

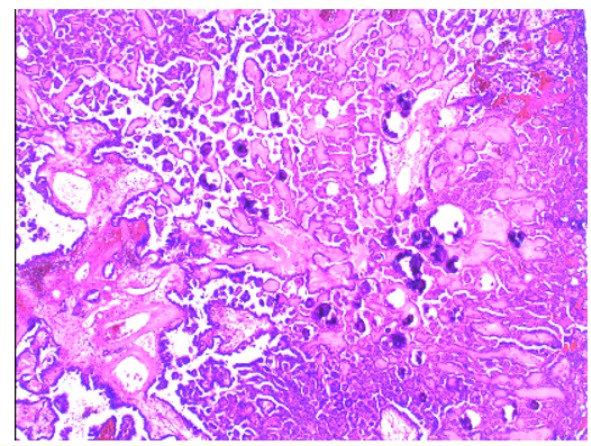

Figure 1: *H&E stain.*

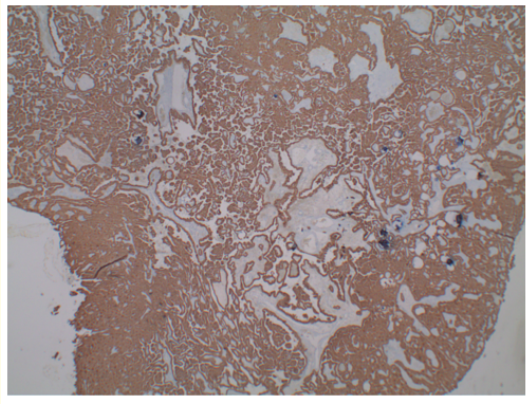

Figure 2: *Positive CK7.*

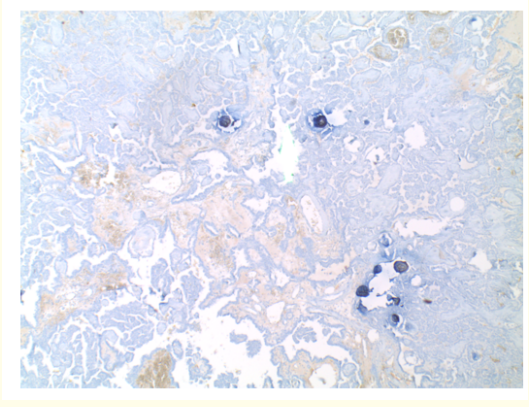

Figure 3: *Thyroglobulin 10x.*

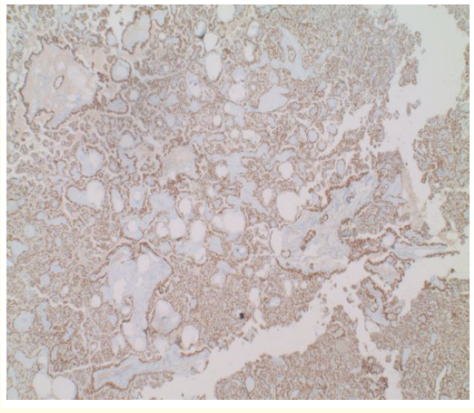

Figure 4: *TTF-1, 10x.*

Discussion

LGNPPAC was first enrolled in the 2005 by Carrizo., *et al*. first reported that two pediatric patients with LGNPAC showed the expression of thyroid transcription factor-1 (TTF-1) in their tumor cell nuclei; named LGNPAC with the expression of TTF-1 "thyroid-like low grade nasopharyngeal papillary adenocarcinoma".

In the 4th edition of World Health Organization (WHO) classification system in 2017, nasopharyngeal carcinoma (NPC) was classified into the following entities: nasopharyngeal carcinomas, papillary adenocarcinomas, and salivary gland tumors. Among all other Nasopharyngeal tumors, LGNPAC has an indolent clinical behavior, and should be regarded as a distinct entity from conventional adenocarcinomas in this region. Up to date, only 42 cases (2021) of nasopharyngeal papillary adenocarcinoma have been reported in the literature. Neither age group nor specific gender is considered risk factor for this entity. The etiology and pathogenesis of nasopharyngeal papillary adenocarcinoma remain to be investigated. Studies have consistently revealed EBV to be closely linked with the development and carcinogenesis of nasopharyngeal carcinoma, particularly the non-keratinizing subtype. However, the relationship between nasopharyngeal papillary adenocarcinoma and EBV or HPV is still uncertain.

Nasopharyngeal papillary adenocarcinoma is a region-specific tumor originating from the nasopharyngeal surface epithelium and is usually localized in the roof of the nasopharynx and the posterior edge of the nasal septum. It is a low-grade adenocarcinoma, with predominately papillary architecture. Wenig., *et al*. first described this special adenocarcinoma as a distinct entity and named it as a thyroid-like nasopharyngeal papillary adenocarcinoma (TL-LGNPPA) as well, which has an indolent course and low-grade histopathological features.

Microscopically, the tumor appeared unencapsulated, composed of papillary and glandular growth patterns. The Papillary component is complex; and arborizing including fibrovascular cores. The glandular pattern has a back-to-back and cribriform growth pattern Transitioning from normal nasopharyngeal surface epithelium to neoplastic proliferation.

The cellular features vary in appearance from pseudostratified columnar to cuboidal. The Nuclei are round to oval with vesicular to optically clear-appearing chromatin, where some have nuclear crowding and overlapping with loss of basal polarity. The Nuclear (pseudo) inclusions and Psammoma bodies, mimic orphan Annie nuclear feature in papillary Thyroid carcinomas, as well as mild to moderate nuclear pleomorphism. There is no prominent nucleoli, and/or necrosis. These findings resemble Papillary thyroid carcinoma, therefore, Nasopharyngeal adenocarcinoma, Thyroid like is considered for these tumors (Figure 1A and 1B).

An immunohistochemical panel performed using antibodies to the following antigens: cytokeratin 7(CK7), vimentin, transcription termination factor 1 (TTF1), CK7, S100, thyroglobulin (TG), and glial fibrillary acidic protein (GFAP). *In situ* hybridization for the presence of small Epstein-Barr virus (EBV)-encoded RNA was performed to identify the association between the tumor and EBV. The tumor cells were diffusely positive for TTF1, vimentin, and CK7, and were negative for Thyroglobulin and GFAP. Whereas EBV encoded small nuclear RNA *in situ* hybridization was negative. Based on these exhibited morphological and immunohistochemical findings, the mass is diagnosed as Nasopharyngeal papillary adenocarcinoma (Thyroid like type), and the case was sent for a Tertiary Academic Center for consultation and confirmation.

Some case has been identified in patients with Turner syndrome. However, no other syndrome associations have been identified.

The differential diagnosis with the above-mentioned morphology includes: (1) Metastatic papillary thyroid carcinoma in which morphology of the tumor is identical to LGNPPAC. Both tumors are TTF-1(+), however, in papillary thyroid carcinoma thyroglobulin is positive. (2) Papilloma (Surface epithelial or minor salivary gland origin) that is an exophytic lesion, lacking complex papillary growth and infiltrative pattern seen in nasopharyngeal papillary adenocarcinoma. (3) Minor salivary gland neoplasms, which lacks surface epithelial

origin, complex papillary growth, cytomorphologic features, and TTF-1 reactivity. (4) Metastatic lung adenocarcinoma lacks thyroglobulin reactivity. (5) Sino-nasal adenocarcinomas which lacks both papillary thyroid carcinoma like features and immunohistochemical profile.

According to the literature review, patients with nasopharyngeal papillary adenocarcinoma have an excellent prognosis with almost no recurrence. Surgical resection is currently the mainstay of treatment for the primary low grade nasopharyngeal papillary adenocarcinoma, but some patients also received radiation or chemotherapy. Photodynamic therapy with topical 5-aminolevulinic acid as a postoperative adjuvant therapy for an incompletely resected primary nasopharyngeal papillary adenocarcinoma has been reported.

Conclusion

In conclusion, nasopharyngeal papillary adenocarcinoma is an extremely rare entity, the awareness of which is necessary among pathologists to consider this unusual neoplasm and avoid misdiagnosis. Having the rarity of this entity, we recommend that a constellation of the clinical, morphological, immunohistochemical features should be used to make a diagnosis of Low Grade Papillary Nasopharyngeal Carcinoma- Thyroid Like Type. We also recommend seeking consultation from Tertiary Academic Institutions to confirm diagnosis. We find that nuclear features, papillary architecture and immunohistochemical reactivity to TTF-1 are the clues which helps us the most to suspect the diagnosis.

Disclaimer

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

Patient Consent

Patient has been signed informed consent for publishing the case.

Conflict of Interest

Authors has no conflict of interests.

Bibliography

1. Sourati A., *et al*. "Thyroid-like low-grade papillary adenocarcinoma of nasopharynx". *BMJ Case Reports* 12.6 (2019).
2. Shen CH., *et al*. "Primary nasopharyngeal papillary adenocarcinoma: A CARE-compliant case report". *Medicine* 100.44 (2021).
3. Complete endoscopic resection of low-grade nasopharyngeal papillary adenocarcinoma_ a case report. Elsevier Enhanced Reader (2021).
4. Yokoi H., *et al*. "Biphasic low-grade nasopharyngeal papillary adenocarcinoma: A case report and literature review". *BMC Clinical Pathology BioMed Central* 18 (2018).
5. Takakura H., *et al*. "Clinicopathological Features of Thyroid-Like Low-Grade Nasopharyngeal Papillary Adenocarcinoma: A Case Report and Review of the Literature". *Frontiers in Surgery* 19 (2020): 7.
6. Lee SH., *et al*. "Biphasic thyroid-like low-grade nasopharyngeal papillary adenocarcinoma with a prominent spindle cell component: A case report". *Diagnostics* 10.5 (2020).

7. Mirza R., *et al*. "Thyroid-Like Low-Grade Nasopharyngeal Papillary Adenocarcinoma with Biphasic Histology". *Case Reports in Pathology* (2020): 1-3.

8. Maocai L., *et al*. "Thyroid-like low-grade nasopharyngeal papillary adenocarcinoma: A case report". *Medicine* 99.33 (2020): e21599.

9. Zhang WL., *et al*. "Primary thyroid-like low-grade nasopharyngeal papillary adenocarcinoma". *Medicine* 96 (2017).

10. Zhong QY., *et al*. "Endoscopic Low-Temperature Plasma Radiofrequency Ablation for Primary Thyroid-Like Low-Grade Nasopharyngeal Papillary Adenocarcinoma". *Ear, Nose and Throat Journal* 100.7 (2021): 563-564.

11. Kerry B Baumann and Sasha J Betz. "Thyroid-Like Low-Grade Nasopharyngeal Papillary Adenocarcinoma". *Head and Neck Pathology* 13.4 (2019): 661-663.

12. Xiaoli Wang., *et al*. "Low-grade nasopharyngeal papillary adenocarcinoma: a case report and review of the literature". *Onco Targets and Therapy* 9 (2016): 2955-2959.

Volume 6 Issue 5 May 2023